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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,390	05/02/2001	Ming C. Hao	10003407-1	6484

7590   12/30/2003

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EXAMINER
CHANNAVAJJALA, SRIRAMA T

ART UNIT	PAPER NUMBER
2177	

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/847,390	HAO ET AL.
	Examiner	Art Unit	
	Srirama Channavajjala	2177	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 October 2003</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4)☐ Interview Summary (PTO-413) Paper No(s). _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   Examiner acknowledges applicant's amendment filed on 10/24/2003, paper no.6.

2.   Claims 21-33 have been added, paper no.# 6.

3.   Claims 1-33 are pending in this application.

Drawings

4.   Examiner acknowledges applicant's drawings 3 and 6.

Information Disclosure Statement

5.   The information disclosure statement (IDS) filed on 10/24/2003, paper no. # 5

has been considered by the examiner, however, it is noted that one of the reference: 1S

A.S. Glasner, "principles of digital Imaging Synthesis", Morgan Kaufmann Publishers,

San Fransisco, 1995, ***is not received***, applicant is hereby required to submit this

reference for further consideration in response to this office action, paper no. # 7.

A copy of PTO-1449 is hereby enclosed to this office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6.   Claims 1-14,16,19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster motion visualization for very high dimensional transactional data, proceedings of first international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, in view of Agrawal et al., [hereafter Agrawal], US Patent No. 5794209.

7.   As to Claim 1, 11, 13, 21,24, Gupta teaches a system which including 'visualizing information' [see Abstract], 'receiving information having plurality of items' [page 2, line 33-36], plurality of items corresponds to data set having 10,000 or more products as detailed in page 2, line 33-35, 'generating a graph of the items by arranging the items on a spherical surface to specify an initial position of each item' [page 11, item 5.2, fig 4a-4b], Gupta specifically directed to generating three dimensional graph with respect to data clusters as detailed in fig 4a-4b, 'constructing a frequency matrix for

defining a stiffness measure of a spring attached to each pair of items' [page 11,

item 5.2, page 13, line 1-14, table 2], Gupta specifically suggests for example type of

cluster, closet cluster and time frequency for specific customer between two different

time limits that corresponds to frequency matrix; 'relaxing the graph, wherein after

relaxation the graph converges to a state of local minimal energy, wherein the distance

between a pair of items represents the frequency of the item set in the transaction data'

[page 14, fig 7-8], 'association directions between the items in the transaction data'

[page 10, line 5-36]. It is however, noted that Gupta does not specifically teach'

employing a directed edge to represent the association confidence levels'. On the other

hand, Agrawal disclosed 'employing a directed edge to represent the association

confidence levels' [col 3, line 53-62], Agrawal specifically directed to user-defined

minimum support confidence level with respect to large item sets and subsets as

detailed in col 3, line 53-62.

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate Agrawal et al., into detecting seasonal trends and

cluster motion visualization for very high dimensional transactional data of Gupta et al.,

because both are directed to knowledge discovery with respect to user or customer

transactions or purchasing, more specifically Gupta is directed to transactional data

particularly e-commerce business data presented in a visualization schemes

[see Abstract], while Agrawal et al., is directed to quickly mining association rules in

databases, more specifically, discovering consumer purchasing tendencies that

specifically identifies customer transaction item sets that are stored in a database

[see Abstract]. One of the ordinary skill in the art the time of applicant's invention to

combine the references because that would have allowed uses of Gupta to implement

computer program product that selects specific subsets of itemsets and satisfies the

minimum confidence criteria defined by the user, further satisfies rules associated the

discovering trends between item set recurrence at least equals user-defined confidence

as suggested by Agrawal et al., [see Abstract, col 3, line 45-62], thus improving

accuracy and performance of data analysis.

8.   As to claim 2, 14, Agrawal disclosed 'generating a confidence matrix for defining

the confidence level of each association' [col 4, line 15-25].

9.   As to Claim 3, 26, Agrawal disclosed 'receiving a user-defined minimum

confidence level' [col 3, line 54-62], 'displaying items having an association with a

confidence level that is in a predetermined relationship with the user-defined minimum

confidence level' [fig 2, col 6, line 5-18].

10.   As to Claim 4, 27, Agrawal disclosed 'receiving a plurality of items' [col 6, line 6-

7], 'receiving internet transaction data' [col 5, line 48-51, line 53-61], 'transactions,

products, transactions' [col 7, line 25-40].

11.   As to Claim 5, 12, 28, Agrawal disclosed 'plurality of transactions, where each

transaction includes one or more items' [col 7, line 41-45]. On the other hand, Gupta

disclosed 'generating a graph of the items by arranging the items on a spherical surface

to specify an initial position of each item, organizing the itmes based on how frequently

the items appear in transactions' [page 8, item 4.2], 'specifying the initial position of

each item in one of a random fashion and a predetermined fashion' [page 10, line 5-37].

12.   As to Claim 6, 29, the limitation of this claim have been noted in the rejection of

above claim 5. In addition, Gupta disclosed 'distributing the items equally on a spherical

surface, wherein tightness is a sum of all supports from a current item to directly

adjacent items, and wherein more tightly related items are disposed in the center of the

sphere and the less tightly related items are evenly distributed around the center' [page

11, item 5.2, fig 4a-4b].

13.   As to Claim 7, 30, the limitation of this claim have been noted in the rejection of

above claim 6. In addition, Gupta and Agrawal both teach statistical analysis of large

data sets [see Gupta: Abstract; Agrawal: Abstract], Gupta also teaches 'distributing the

items equally on a spherical surface [see fig 4a-4b]. It is however noted that sampling

of data sets are integral part of both Gupta and Agrawal's teaching because they are

directed to sampling of data sets. It is noted that sampling is based on stochastic

sampling, more specifically based on Poisson distribution is common knowledge in the

art, further Poisson disc sampling is based on Poisson distribution with minimum-

distance constraint between samples either added or removed points at random to any previous points.

14.   As to Claim 8, 31, Gupta disclosed 'frequency matrix includes a plurality of elements, wherein each element includes the frequency of occurrence of the association in all transactions after normalization' [fig 4, page 11, item 5.2], Gupta specifically directed to position matrix that specifically indicate at least trends discovered using visualization.

15.   As to Claim 9-10, 32-33,the limitation of this claim has been noted in the above claim 8. In addition, Gupta disclosed 'three-dimensional sphere wherein the distance between each pair of items represents the support therebetween' [see fig 4].

16.   As to Claim 16, Gupta disclosed 'market basket analysis application' [see Abstract].

17.   As to Claim 19-20, Agrawal disclosed 'text mining application' [see Abstract, fig 1]

18.   Claims 15,17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster motion

visualization for very high dimensional transactional data, proceedings of first

international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, Agrawal

et al., [hereafter Agrawal], US Patent No. 5794209 as applied to Claim 1,11 above,

further in view of Ratnavale et al., [hereafter Ratnavale], WO 01/08072A1

19.   As to Claim15, Gupta disclosed 'visually associate product affinities and

relationships' [see fig 4-6], while Agrawal teaches large itemsets related to transaction

data [see Abstract], however, it is noted that both Gupta and Agrawal do not specifically

teach 'electronic commerce web site, products for sale'. On the other hand Ratnavale

disclosed 'electronic commerce web site, products for sale' [see Abstract, fig 6-7].

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate teaching of Ratnavale into detecting seasonal trends

and cluster motion visualization for very high dimensional transactional data of

Gupta et al., and quickly mining association rules in databases of Agrawal et al.,

because that would have allowed users of Gupta, Agrawal to access interactive market

system via world wide web or internet based product sales and services of Ratnavale

[see Abstract, fig 1], further bringing the advantages of multiple buyers, vendors to

customize the market to meet their individual needs in real-time via Internet as

suggested by Ratnavale [page 3, line 12-16].

20.   As to Claim 17-18, Ratnavale disclosed 'telecommunications, network traffic

analysis application [page 7, line 20-28, fig 1].

21.   Claims 1,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gunjan K Gupta et al., [hereafter Gupta], Detecting seasonal trends and cluster motion

visualization for very high dimensional transactional data, proceedings of first

international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18, in view of

Mohammed Javeed Zaki et al., [hereafter Zaki], Evaluation of sampling for data mining

of association rules, 7th Wkshp.Resrch.Iss.Data Engg, 1996, pp1-9

22.   As to Claim 1, 11, Gupta teaches a system which including 'visualizing

information' [see Abstract], 'receiving information having plurality of items' [page 2,

line 33-36], plurality of items corresponds to data set having 10,000 or more products as

detailed in page 2, line 33-35, 'generating a graph of the items by arranging the items

on a spherical surface to specify an initial position of each item' [page 11, item 5.2,

fig 4a-4b], Gupta specifically directed to generating three dimensional graph with

respect to data clusters as detailed in fig 4a-4b, 'constructing a frequency matrix for

defining a stiffness measure of a spring attached to each pair of items' [page 11, item

5.2, page 13, line 1-14], 'relaxing the graph, wherein after relaxation the graph

converges to a state of local minimal energy, wherein the distance between a pair of

items represents the frequency of the item set in the transaction data' [page 14, fig 7-8],

'association directions between the items in the transaction data' [page 10, line 5-36].

It is however, noted that Gupta does not specifically teach' employing a directed edge to represent the association confidence levels'. On the other hand, Zaki disclosed 'employing a directed edge to represent the association confidence levels' [page 6, col 1, item 4.4, col 2, fig 5].

It would have been obvious to one of the ordinary skill in the art at the time of applicant's invention to incorporate Zaki et al., into detecting seasonal trends and cluster motion visualization for very high dimensional transactional data of Gupta et al., because both are directed to data analysis, more specifically Gupta is directed to transactional data particularly e-commerce business data presented in a visualization schemes [see Abstract], while Zaki et al., is directed to Evaluation of sampling for data mining of association rules, more specifically, sampling, analyzing large volumes of transactional business data using association rules [see Abstract]. One of the ordinary skill in the art the time of applicant's invention to combine the references because that would have allowed uses of Gupta to effectively sampling the various transactional related data, more specifically sampling item set size and large item sets for stabling accuracy measurements, further establishing confidence levels between various sampling data sets as suggested by Zaki et al., [see page 2, col 2, sampling algorithm, fig 2, page 6, col 1, item 4.4], thus improving accuracy and performance of data analysis.

Response to Arguments

23.   Applicant's arguments filed on 10/24/2003 with respective to Claims 1-33 have

been fully considered but they are not persuasive, for eaminers' response, see

discussion below:

a)   At page 9, Claims 1-14,16,19-20, applicant argues obviousness is not

established.

At page 10, Claims 1-14,16,19-20, applicant argues office action does not

provide sufficient evidence of a motivation.........

At page 11, Claims 1-14,16,19-20, applicant argues the alleged motivation is

merely a broad conclusory statement........

In response to applicant's above argument that there is no suggestion to combine

the references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in

the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and In re

Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Primary

reference Gupta et al., is directed to detecting seasonal trends and cluster motion

visualization for very high dimensional transactional data, more specifically, related to e-

commerce business where predetecting, analyzing, buying behaviors, market

segmentation are taken into consideration for market vs customer migration as detailed

in Abstract, further Gupta also specifically suggests for example visualzing information

that generates graph as shown in fig 1-2,4, especially fig 4 is directed to 3-D plot for

visualizing information. Examiner also noted in the office action that Gupta does not

specifically suggest employing a directed edge to represent the association confidence

levels'. On the other hand, Agrawal disclosed 'employing a directed edge to represent

the association confidence levels' [col 3,   line 53-62], Agrawal specifically directed to

user-defined minimum support confidence level with respect to large item sets and

subsets as detailed in col 3, line 53-62.

It would have been obvious to one of the ordinary skill in the art at the time of

applicant's invention to incorporate Agrawal et al., into detecting seasonal trends and

cluster motion visualization for very high dimensional transactional data of Gupta et al.,

because both are directed to knowledge discovery with respect to user or customer

transactions or purchasing, more specifically Gupta is directed to transactional data

particularly e-commerce business data presented in a visualization schemes

[see Abstract], while Agrawal et al., is directed to quickly mining association rules in

databases, more specifically, discovering consumer purchasing tendencies that

specifically identifies customer transaction item sets that are stored in a database

[see Abstract]. One of the ordinary skill in the art the time of applicant's invention to

combine the references because that would have allowed uses of Gupta to implement

computer program product that selects specific subsets of itemsets and satisfies the

minimum confidence criteria defined by the user, further satisfies rules associated the

discovering trends between item set recurrence at least equals user-defined confidence

as suggested by Agrawal et al., [see Abstract, col 3, line 45-62], thus improving

accuracy and performance of data analysis.

b)   At page 9, Claim 1, applicant argues, claim 1 includes limitations that relate to

generating a graph of transaction items by arranging ...... spherical surface to

specify.....

As to the above argument, examiner specifically rejected this limitation as Gupta

suggests arranging items for on a spherical surface for example 3-D visualization

arranging various cluster space data related to customer migration as detailed in fig 4.

c)   At page 10, Claim 1, applicant argues Gupta's teachings do not in any apparent

way teach the stiffness measure...............

As to the above argument, as best understood by the examiner, Gupta

specifically suggests for example type of cluster, closet cluster and time frequency for

specific customer between two different time limits that corresponds to frequency

matrix, further Gupta also suggests for example two sets of clusters are that defining

peak-session, off-peak session that establishes stiffness measure of items, therefore,

stiffness measure of items are integral part of Gupta's teaching.

d)   At page 11, Claim 2, applicant argues Agrawal does not appear to suggest a

matrix of the confidence level.....

As to the above argument, as best understood by the examiner Agrawal is

directed to discovering consumer purchasing tendencies [see Abstract], Agrawal also

teaches discovering association rules in itemsets that are related to transaction

database [see col 2, line 46-57], further it is noted that Agrawal suggests for example

confidence value of associated itemsets for minimum support value as detailed in col 4,

line 5-23. As best understood by the examiner the confidence level is the probability

value associated with a confidence interval that determines based on predetermined

minimum confidence value, therefore, matrix of the confidence levels are integral part of

Agrawal's teaching.

Examiner applies Claim 2 arguments discussed above applies to Claim 3.

e)   At page 12, Claims 5-7, applicant argues, employing a Poission Disc

sampling..............is not believed to be well known.....

As to the above argument, As best understood by the Examiner, both Gupta,

Agrawal do teach statistical analysis of large data sets [see Gupta: Abstract; Agrwal:

Abstract], further analyzing large data sets in a distributed items using sampling is

common knowledge in the art , further concept of sampling such as Stochastic sampling

is also common knowledge in the art, while Poission Disc sampling is simply applied

where minimum distance between samples are required for further analysis.

As to Claims 8-10,12-13,16,19-20 examiner applies above discussed reasons.

f)   At page 13, Claim 15,17-18, applicant argues no teaching or suggestion appars

relevant to directed ....confidence levels.

As to the above argument, as best understood by the examiner Zaki is directed

to sampling of data mining of association rules, more specifically random sampling of

transactions in the database [see Abstract, page 1, col 2], it is also noted that Zaki

specifically suggests for example sampling algorithm applied to vary large sample sizes,

determining or setting specific confidence levels to various large sample sizes are

integral part of Zaki's teaching because confidence level is the probability value

associated with a confidence interval that determines based on predetermined minimum

confidence value.

Conclusion

The prior art made of record

a.   Gunjan K Gupta et al., Detecting seasonal trends and cluster motion visualization for very high dimensional transactional data, proceedings of first international SIAM conference on Data Mining (SDM01), April, 2001, pp 1-18

b.   Mohammed Javeed Zaki et al., Evaluation of sampling for data mining of association rules, 7th Wkshp.Resrch.Iss.Data Engg, 1996, pp1-9

c.   US Patent No.   5794209

d.   WO 01/08072A1

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

e.   US Patent No.   6141006

f.   US Patent No.   6225998

g.   US Patent No.   6157705

h.   US Patent No.   6292784

i.   US Patent No.   6334110

j.   US Patent No.   2002/0087679

k.   WO 01/80098

l.   EP0610581A2

m.   EP1077413A2

n.   Paulo B et al., Mining web access logs of an On-line

newspaper, pp1-8

o.   Mihael A, Visual data mining with Pixel-oriented

visualization techniques, pp1-8

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy

as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Srirama Channavajjala whose telephone number is

(703) 308-8538.   The examiner can normally be reached on Monday-Friday from

8:00 AM to 5:30 PM Eastern Time. The TC2100's Customer Service number is

(703)306-5631.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John E. Breene, can be reached on (703) 305-9790. The fax phone

numbers for the organization where the application or proceeding is assigned are as

follows:

703/746-7238	**(After Final Communication)**
703/872-9306	**(Offical Communications)**
703/746-7240	**(For Status inquiries, draft communication)**

Any inquiry of general nature or relating to the status of this application or

proceeding should be directed to the Group receptionist whose telephone number is

(703) 305-9600.

sc

Patent Examiner.
December 29, 2003.